

ATTACHMENT J4

Fort Sam Houston Wastewater System

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J4 Fort Sam Houston Wastewater System

J4.1 Fort Sam Houston Overview

Fort Sam Houston consists of three major areas: Fort Sam Houston Main Cantonment, Camp Bullis, and the Canyon Lake Recreation Area (CLRA). Fort Sam Houston and its sub-installations, Camp Bullis and CLRA, occupy approximately 31,000 acres in south-central Texas, in Bexar and Comal counties. Fort Sam Houston (approximately 3,150 acres) is located within the city limits of San Antonio, in Bexar County, Texas, 2.5 miles northeast of downtown San Antonio. Camp Bullis (approximately 28,000 acres) is located approximately 18 miles northwest of Fort Sam Houston, on a site approximately 10 miles long (north to south) and 4 miles wide, in Bexar County. The CLRA (110 acres) is an outdoor recreation area located in rural Comal County, 48 miles northeast of Fort Sam Houston, within Jacob's Creek Park in the Canyon Lake Reserve.

Fort Sam Houston is unique among Army posts. It is a major, active military installation which plays a vital role in the defense of the United States and it contains some of the oldest structures on any of the Army's installations dating back almost a century and a half. The Fort first occupied rented land in 1845 and grew into a major garrison by the late 1800s. Since then, it has developed into a large modern military installation. Its mission began to shift toward a medical emphasis after World War II as a result of the presence of Brooke General Hospital and relocations of other medical missions to Fort Sam Houston. Much of the Fort Sam Houston surrounding area is established, with only minor growth likely to occur in the future. The City's John James Park and the Fort Sam Houston National Cemetery (owned and administered by the U.S. Veterans Administration) are contiguous with the Fort Sam Houston property on the northeast end of the post.

The area surrounding Camp Bullis was primarily rural until the mid-1900s. Since then the area has become increasingly urbanized through residential development and expansion. Camp Bullis is surrounded by a combination of rural agricultural land, scattered houses, and new residential development (primarily on the west and east sides). Approximately 17,000 acres were originally purchased for Camp Bullis (known until 1917 as Leon Springs Military Reservation) in 1906, to provide adequate space for field training and weapons ranges to support units at Fort Sam Houston. During World War II, the role of Camp Bullis as a major processing and training center for U.S. troops expanded. As the role of Fort Sam Houston has shifted toward medical training, Camp Bullis has provided the larger area required for field training of troops going into combat.

The Canyon Lake Recreation Area (CLRA) is in a rural setting, comprised mostly of private land, interspersed with small public parks. Its recreational facilities include a marina, campgrounds, recreational vehicle sites, and basic vacation units for military personnel. The U.S. Army Corps of Engineers (USACE) owns and manages the reserve, Canyon Lake reservoir, and the shoreline areas primarily for flood control purposes. Fort Sam Houston is responsible for maintaining its own facilities and complying with any state (or federal) regulations governing water quality or hazardous substances.

The Fort Sam Houston primary and secondary missions are to provide medical training to Army personnel and to maintain, operate, and support Brooke Army Medical Center (BAMC). In addition, Fort Sam Houston commands, operates, and administers the use of the resources of Fort Sam Houston, Camp Bullis, and the CLRA for the accomplishment of all assigned missions and provides support to assigned, attached, and tenant units. Camp Bullis' primary and secondary missions are to provide field training and firing ranges, respectively.

Fort Sam Houston is currently evaluating privatization of military family housing units. All of these units are located on the Main post, Camp Bullis and CLRA do not have housing units being considered. Fort Sam Houston has approximately 960 military family housing units. Housing privation is expected to occur prior to contract award.

The population of Fort Sam Houston in 2003 was 24,044 military and civilian personnel, excluding dependents. The major tenants associated with Fort Sam Houston include:

- U.S. Army Medical Department Center and School (AMEDD C&S).
- Brooke Army Medical Center (BAMC)
- HQ MEDCOM
- HQ Fifth U.S. Army
- HQ U.S. Army 5th Recruiting Brigade
- HQ U.S. Army South
- IMA Southwest Region Office

The Fort Sam Houston Independent School District operates an elementary and junior/senior high school for military dependents.

J4.2 Wastewater System Description

J4.2.1 Wastewater System Fixed Equipment Inventory

The Fort Sam Houston wastewater system consists of all appurtenances physically connected to the collection system as defined by the points of demarcation beginning at the connection to the treatment provider and ending at each end use facility. The system may include, but is not limited to, pipelines, manholes, lift stations, valves, controls, treatment plants, and meters. The actual inventory of items sold will be conveyed to the Contractor using the Bill of Sale shown in Attachment JXX [DESC to update] to the RFP at the time the system is transferred.

The following description and inventory is included to provide the Contractor with a general understanding of the size and configuration of the collection and treatment systems. The description and inventory were developed based on best available data.

The Offeror shall base its proposal on site inspections, information in the technical library, and other pertinent information, as well as the following description and inventory. If after award the Offeror identifies additional inventory not listed in Paragraph J4.2.1.3, the Offeror

may submit to the Contracting Officer a request for an equitable adjustment. If the Offeror determines that the inventory listed in Paragraph J4.2.1.3 is overstated, the Offeror shall report the extent of the overstatement to the Contracting Officer, who will determine an equitable adjustment.

J4.2.1.1 System Description

The Fort Sam Houston wastewater collection and treatment systems are physically separated into three separate systems. One system serves the Fort Sam Houston Main Cantonment, the second serves Camp Bullis, and the third serves the Canyon Lake Recreation Area (CLRA). The wastewater collection system at Fort Sam Houston collects wastewater from administrative, industrial, and residential facilities for off-installation treatment by the San Antonio Water System. The system serves approximately 1,280 facilities on the Main Cantonment area. Camp Bullis collects and treats wastewater from approximately 250 facilities and is a permitted zero discharge Installation. CLRA collects and treats wastewater from approximately 40 facilities, discharging the treated effluent into Canyon Lake.

Specifically excluded from privatization of the wastewater collection and treatment system are:

- Abandoned lines.
- Stormwater systems.
- Oil/water separators.
- Grease traps.
- Septic tanks and leach fields.
- Air Force Compound on Camp Bullis
- Service laterals in the National Cemetery.
- Service laterals from the Point of Demarcation to the Military Family Housing Units..
- Service laterals at CLRA.

J4.2.1.1.1 Fort Sam Houston

The system that serves the Main Cantonment area does not include any treatment facilities. Wastewater is collected and discharged to the San Antonio Water System collection network at 21 locations on the Post. The wastewater collection system consists of gravity sewer laterals and mains, force mains, manholes, clean-outs, and lift stations. Construction of the wastewater collection system infrastructure began in the early 1940s and continues today as the installation missions change and new facilities are constructed. Since 1990, approximately 50 percent of the collection mains and laterals have been slip lined or replaced with PVC pipe. Most of, but not all of the new PVC pipe was installed with marking tape. Manholes in these areas have been refurbished with concrete lining or replaced. The older infrastructure is primarily vitrified clay with brick manholes but does include other pipe materials such as terra cotta, concrete, cast iron, and asbestos-cement pipe. The non-metallic pipe was not installed with marking tape to locate the lines. The pipe

ranges from 6 to 48 inches in diameter, with the majority of the mains between 15 and 24 inches in diameter. The collection piping is between 4 and greater than 15 feet below grade with the average approximately 8 feet below grade. Approximately 8 percent is beneath paved surfaces. The prevailing subsurface at Fort Sam Houston is dry sandy clay.

The facilities (lift stations) being conveyed do not include office space, shop areas, or lay down areas. The land these facilities are located on will not be included. The Government, at its discretion, may allow the Contractor to construct additional support facilities on the installation IAW with established facility siting procedures. The Contractor shall also maintain the fence and grounds within fenced areas being conveyed IAW Fort Sam Houston's grounds maintenance regulations.

J4.2.1.1.2 Camp Bullis

On-site wastewater treatment at Camp Bullis consists of a 69,000 gpd activated sludge package plant and a facultative lagoon and chlorine contact basin. The plant was designed to handle a 2-hour peak load of 2.3 MGD and was installed in 1997. The treatment facility consists of a comminutor, activated sludge reactor, secondary clarifier, aerobic digester, and three lagoons, connected in series, with a total surface area of approximately 6.6 acres. The first lagoon is approximately 110 feet by 120, the second is approximately 350 feet by 317 feet, and the third is approximately 290 feet by 570 feet. All lagoons are approximately 6 feet deep, and the combined volume of the lagoons is approximately 12.9 million gallons, or 64,000 cubic yards. Trash collected on the treatment plant bar screens is bagged in plastic bags and placed in a specially constructed dumpster. Off-site disposal of this trash as well as the sludge is Contracted out.

The treatment system includes an irrigation system that uses the treated effluent to irrigate the grass on the ranges. Up to 190 acres can be irrigated with the system; however, only approximately 80 acres are currently irrigated. Two 150-Hp pumps feed the irrigation system. The Camp Bullis system is a permitted, zero-discharge system.

There are 5 lift stations on Camp Bullis. Each has submersible grinder pumps. Since 1990, approximately 50 percent of the collection system has been replaced with PVC pipe or slip lined. Most of, but not all of the new PVC pipe was installed with marking tape. The older portions that have not been replaced are primarily vitrified clay. The vitrified clay pipe was not installed with marking tape to locate the lines. All manholes have been upgraded to concrete; none are brick. The majority of the piping is between 4 and 8 feet below grade, but there is an area where the depth reaches 20 feet. The pipe ranges from 2 to 14 inches in diameter. Approximately 8 percent of the buried infrastructure is beneath paved surfaces. The prevailing subsurface at Camp Bullis is rock.

The facilities (treatment plant and lift stations) being conveyed do not include office space, shop areas, or lay down areas. The land these facilities are located on will not be included. The Government, at its discretion, may allow the Contractor to construct additional support facilities on the installation IAW with established facility siting procedures. The Contractor shall also maintain the fence and grounds within fenced areas being conveyed IAW Fort Sam Houston's grounds maintenance regulations.

J4.2.1.1.3 CLRA

A 60,000-gallon-per-day (gpd) aeration package plant treats sanitary wastewater from the recreation area and discharges treated wastewater into Canyon Lake. The point of demarcation is the end of the outfall pipe. The plant is permitted to discharge 10,000 gpd. Wastewater is discharged IAW TPDES permit TX12074-001.

The treatment plant consists of a bar screen, two aeration tanks in series, two primary clarifiers in parallel, a holding tank, and a chlorine contact chamber. In 1983, a 55,000 gallon holding tank was added to the system. The original design was to use one clarifier as a secondary clarifier. Due to peak loading during holidays, both clarifiers are operated in parallel. There is no cathodic protection on the treatment facilities at CLRA.

Trash collected off the bar screen is placed in plastic bags that are placed into a special-built dumpster. The trash and sludge generated from the treatment facility are disposed of off-site by contract.

The collection system at CLRA is a gravity system. The collection system consists of 6-inch vitrified clay pipe. Approximately 8 percent is beneath paved surfaces. The burial depth ranges from 18-inches to 6-feet, with an average of about 4-feet. The prevailing subsurface at CLRA is rock.

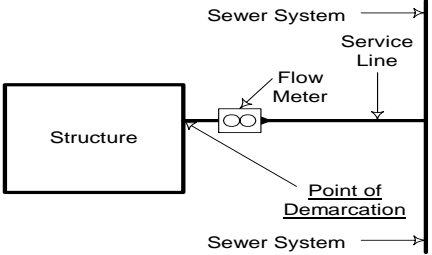
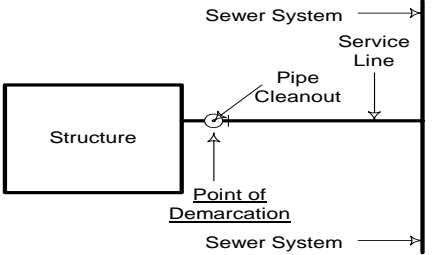
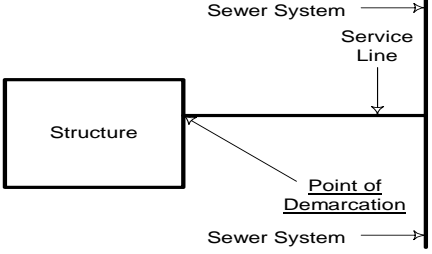
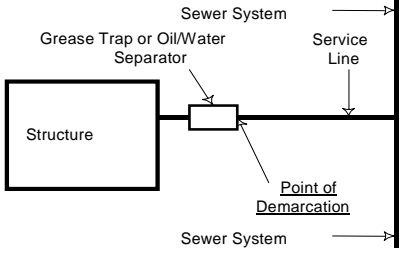
The facilities (treatment plant and lift stations) being conveyed do not include office space, shop areas, or lay down areas. The land these facilities are located on will not be included. The Government, at its discretion, may allow the Contractor to construct additional support facilities on the installation IAW with established facility siting procedures. The Contractor shall also maintain the fence and grounds within fenced areas being conveyed IAW Fort Sam Houston's grounds maintenance regulations.

J4.2.1.2 Points of Demarcation

The Fort Sam Houston wastewater collection and treatment system being studied consists of all components from the point where wastewater is collected from individual facilities to the point where the Post discharges wastewater to the city of San Antonio for treatment. The point of demarcation with the City system is the discharge pipe at 21 manholes, each near the installation boundaries. The Post owns the manholes at these locations. Camp Bullis is a zero-discharge installation with treated effluent being used to irrigate the ranges. The system includes all components from the point where the wastewater is collected at the facilities to the sprinklers that apply the effluent. CLRA's collection and treatment system includes all components from the point the wastewater is collected in the mains to the end of the outfall pipe in Canyon Lake.

The point of demarcation for each end user is defined as the point or component on the collection system where ownership changes from building owner to the utility owner. In most cases the point of demarcation for the users is the first upstream component (i.e., cleanout, valve, etc.) of the system located outside of the facility footprint. **Table 1** identifies the type of service and general location of the point of demarcation with respect to each building served by the collection system.

TABLE 1
Wastewater Collection and Treatment System Points of Demarcation
Wastewater Collection and Treatment System, Fort Sam Houston, Texas

Point of Demarcation	Applicable Scenario	Sketch
Fort Sam Houston		
Point where the service line exits the structure <i>Note: A new cleanout device should be installed within 25' of building during any stoppage or maintenance action. The upstream side of the cleanout device will then become the new point of demarcation.</i>	Non-residential service. Wastewater system flow meter is located on the service line exiting the structure.	
Point of demarcation is the upstream side of the cleanout device.	Non-residential service. No flow meter exists and a wastewater system cleanout is located within 25 feet of the building perimeter on the service line exiting the structure.	
Point of demarcation is where the service line exits the structure <i>Note: A new cleanout device should be installed within 25' of building during any stoppage or maintenance action. The upstream side of the cleanout device will then become the new point of demarcation.</i>	Non-residential service. No flow meter or cleanout exists within 25 feet of the building perimeter on the service line exiting the structure.	
Point of demarcation is the downstream side of grease trap or oil/water separator. <i>Note: This point of demarcation does not apply to grease traps or oil/water separators included as a part of the wastewater system inventory (connected to lift/pump stations).</i>	Non-residential service. Grease trap or oil/water separator.	
Point of demarcation is five feet inside the curb.	Residential service. Main line located in the street or within five feet of the curb.	None
Point of demarcation is where the service lateral connects to	Residential service. Main line located more than five feet inside of	None

Point of Demarcation	Applicable Scenario	Sketch
the main.	the curb.	
<p>Point of demarcation is the point where the service line connects to the sewer main.</p> <p><i>Note: This point of demarcation has been established by the Housing Privatization initiative. All components of the wastewater collection and treatment system not included as a part of the residence are included with wastewater collection and treatment system included for privatization.</i></p>	Service in the National Cemetery on Fort Sam Houston.	
Camp Bullis		
<p>Point of demarcation is where the service line exits the structure</p> <p><i>Note: A new cleanout device should be installed within 25' of building during any stoppage or maintenance action. The upstream side of the cleanout device will then become the new point of demarcation.</i></p>	Residential and Non-residential service on Camp Bullis.	
Point of demarcation for utility ownership is the point where the force main from the lift station crosses the fence at the compound boundary.	Air Force Compound on Camp Bullis.	None
Canyon Lake Recreational Area (CLRA)		
Point of demarcation is the point where the service line connects to the sewer main.	Residential and Non-residential service on Canyon Lake Recreation Area (CLRA).	

J4.2.1.3 Condition Assessment

The wastewater collection and treatment system condition is presented below for each of the three systems at Fort Sam Houston, Camp Bullis, and CLRA.

J4.2.1.3.1 Fort Sam Houston

Fort Sam Houston has replaced 50 percent of the collection system since 1990 due to inflow/infiltration problems and deteriorating lines. New mains are either PVC or slip lined and laterals are PVC. The new portions of the system are in good condition. Several components in the Fort Sam Houston collection system have either exceeded or are approaching the end of their useful lives and are in poor condition. These include:

- Vitrified clay, cast iron, and cement pipe installed in the 1940s and 1950s.
- Brick manholes installed in the 1940s, 1950s, and 1960s.

The four lift stations on Fort Sam Houston are in good condition. Pumps and control systems were replaced in the 1988. Meters were once installed in the manholes at the twenty-one tie-ins to the city system. Not all of the meters functioned, therefore all 21 were removed, however, mounting hardware remains in several of the manholes.

J4.2.1.3.2 Camp Bullis

At Camp Bullis, approximately 50 percent of the collection system has been replaced since 1990 due to inflow/infiltration (I&I) problems and deteriorating lines. New mains are PVC. All the manholes were refurbished or replaced and are concrete. The new portions of the system are in good condition. The older portions of the collection system have either exceeded or are approaching the end of their useful lives and are in poor condition. These include:

- Vitrified clay, cast iron, and cement pipe installed in the 1940s and 1950s.

The seven lift stations on Camp Bullis are in good condition. Pumps and controls on the two older lift stations were replaced in the 1990's. Four of the lift stations were constructed in the 1990's. One of the lift stations is under construction. The treatment plant was constructed in 1997 and is in good condition.

The treatment plant, lagoons, and irrigation system are in good condition. Operators report they have no problems and have not scheduled any repairs. Currently, Camp Bullis operates the plant at 40,000 gpd. After a spring rainstorm that delivered 3-1/4 inches of rain, the treatment flow increased to 122,000 gpd. The increase in I&I was thought to be due to the condition of the older portions of the system that have not been upgraded.

J4.2.1.3.3 Canyon Lake Recreation Area

The collection and treatment system at CLRA has not been upgraded or replaced. Two of the communitors are not working. Due to the large fluctuation in use of the facilities, the system requires daily chlorine dosage adjustments to meet permit requirements. Dilution with potable water is used in the chlorine chamber to also control chlorine levels. The system, as operated, had one discharge permit violation since 2000. In 2000, TCEQ issued a Notice of Violation to CLRA for allegedly discharging waste by failing to comply with permit limits for Chlorine and Dissolved Oxygen. The NOV was resolved by way of an Agreed Order. There are no identified I&I concerns with the CLRA system, however the piping and manholes were installed in 1966. The collection system is approaching the end of its useful life and considered to be in poor to fair condition.

J4.2.1.4 Inventory

The wastewater collection system piping consists of approximately 69 miles of buried piping ranging in size from 2-inch service laterals to 48-inch main lines for all three systems. There are a total of 11 wastewater pump/lift stations on all three systems to collect and transfer wastewater. In addition there are two treatment facilities, one on Camp Bullis and one on CLRA. Other components include manholes, valves, cleanouts, and meters. **Table 2A** provides an inventory listing for the system on Fort Sam Houston. **Tables 2B** and **2C** list the inventory for Camp Bullis and CLRA respectively.

The approximate year of construction for collection mains were estimated based on maintenance personnel knowledge. The new portions of the systems have been replaced in phases starting in 1990. These replaced portions were assigned an age of 1995 in **Tables 2A, 2B, and 2C**. The older portions were assigned the mid-decade (e.g., components constructed in the 1970s were shown in the inventory as 1975) in which maintenance personnel thought that portion of the system was installed.

When not specifically identified by system drawings, the size and type of system components were estimated, generally based on the size of the piping the component was connected to. Additionally, when the year of construction was not known, it was estimated based on the age of the piping.

TABLE 2A
Fixed Inventory, Wastewater Collection System
Wastewater Collection System, Fort Sam Houston, Texas

Wastewater Component	Size	Quantity	Unit	Approximate Year of Construction
Concrete*				
Main	48-in.	1,616	LF	1950
Main	36-in.	1,190	LF	1950
Main	24-in.	8,785	LF	1950
Vitrified Clay*				
Main	21-in.	1,788	LF	1950
Main	20-in.	862	LF	1950
Main	18-in.	3,831	LF	1950
Main	15-in.	8,818	LF	1950
Main	12-in.	6,439	LF	1950
Main	10-in.	8,498	LF	1950
Main	8-in.	42,743	LF	1950
Main	6-in.	51,348	LF	1950
Service	4-in.	43,810	LF	1950

TABLE 2A
 Fixed Inventory, Wastewater Collection System
Wastewater Collection System, Fort Sam Houston, Texas

Wastewater Component	Size	Quantity	Unit	Approximate Year of Construction
M/S (estimated to be vitrified clay at 8-in. diameter.)	8-in.	2,428	LF	1950
PVC*				
Main	48-in.	1,616	LF	1990
Main	36-in.	1,189	LF	1990
Main	24-in.	8,785	LF	1990
Main	21-in.	1,788	LF	1990
Main	20-in.	861	LF	1990
Main	18-in.	3,830	LF	1990
Main	15-in.	8,817	LF	1990
Main	12-in.	6,439	LF	1990
Main	10-in.	8,498	LF	1990
Main	8-in.	42,743	LF	1990
Main	6-in.	51,347	LF	1990
Service	4-in.	43,809	LF	1990
Manholes, Brick**	4-ft.	428	EA	1950
Manholes, Concrete**	4-ft.	427	EA	1990
Sewage Lift Station – #2263 a				
Wetwell ,concrete (estimated 4' dia. X 15')	4' dia. X 15'	1	EA	1988
Pumps, 480 V 3-PH	3 HP	1	EA	1988
Sewage Lift Station – #2263 b				
Wetwell ,concrete (estimated 4' dia. X 15')	4' dia. X 15'	1	EA	1988
Pumps, 480 V 3-PH	3 HP	1	EA	1988
Sewage Lift Station – National Cemetery				
Wetwell ,concrete (estimated 4' dia. X 15')	4' dia. X 15'	1	EA	1988
Pumps (estimated 1 HP)	1 HP	1	EA	1988

TABLE 2A

Fixed Inventory, Wastewater Collection System
Wastewater Collection System, Fort Sam Houston, Texas

Wastewater Component	Size	Quantity	Unit	Approximate Year of Construction
Sewage Lift Station – #1700 Area				
Wetwell, concrete (estimated 5'X5'X30')	5'X5'X30"	1	EA	1996
Pumps, submersible, 240 V 3-PH (rail system 30' deep)	7.5 HP	2	EA	1996
Notes: EA = Each LF = Linear Feet PVC = Polyvinyl Chloride VC = Vitrified Clay * - Piping quantity based one Post supplied total inventory of pipe length. The totally length for each diameter was divided in half with half listed as PVC and half listed as Vitrified Clay, except for sizes above 21-inch. Sizes above 21-inch listed as half PVC and half concrete pipe. ** - Manhole quantity split equally between brick and concrete manholes. M/S – indicates pipe shown on drawings, but no diameter or material of construction was known. This category was assumed to be vitrified clay at 8" diameter.				

TABLE 2B

Fixed Inventory, Wastewater Collection and Treatment System
Wastewater Collection and Treatment System, Camp Bullis, Texas

Wastewater Component	Size	Quantity	Unit	Approximate Year of Construction
Camp Bullis				
Vitrified Clay*				
Main (size and length estimated from real property record)	8-in.	23,135	LF	1950
PVC*				
Main (size and length estimated from real property record)	8-in.	23,135	LF	1990
Manholes, concrete (assumed one manhole every 400 ft.)	4-ft. dia.	115	EA	1997

TABLE 2B

Fixed Inventory, Wastewater Collection and Treatment System
Wastewater Collection and Treatment System, Camp Bullis, Texas

Wastewater Component	Size	Quantity	Unit	Approximate Year of Construction
Sewage Lift Station – #6284				
Wetwell, concrete (estimated 4' dia. X 8')	4' dia. X 8'	1	EA	1997
Pumps (estimated 1 HP and QTY)	1 HP	1	EA	1997
Sewage Lift Station – Hunting HQ				
Wetwell, concrete (estimated 4' dia. X 8')	4' dia. X 8'	1	EA	1997
Pumps (estimated 1 HP and QTY)	1 HP	1	EA	1997
Sewage Lift Station – #6118				
Wetwell, concrete (estimated 4' dia. X 8')	4' dia. X 8'	1	EA	1997
Pumps, submersible	7.5 HP	1	EA	2004
Sewage Lift Station – #6120				
Wetwell, concrete (estimated 4' dia. X 8')	4' dia. X 8'	1	EA	1997
Pumps (estimated 1 HP and QTY)	1 HP	1	EA	1997
Sewage Lift Station – #6125				
			EA	1997
Wetwell, concrete (estimated 4' dia. X 8')	4' dia. X 8'	1	EA	1997
Pumps 60 gpm,	1.7 HP	2	EA	1997
Sewage Lift Station – Deployable Medical Systems Equipment Training (DMSET) (BLDG. 6180)				
Wetwell, concrete (estimated 4' dia. X 8')	4' dia. X 8'	1	EA	1997
Pumps (estimated 2 HP and QTY)	2 HP	1	EA	1997
Cummins emergency back-up generator	80 kW	1	EA	1997
Sewage Lift Station – New Reserve Center				
Wetwell, concrete (estimated 4' dia. X 8')	4' dia. X 8'	1	EA	Under Construction
Pumps (estimated 2 HP and QTY)	2 HP	1	EA	Under Construction

TABLE 2B

Fixed Inventory, Wastewater Collection and Treatment System
Wastewater Collection and Treatment System, Camp Bullis, Texas

Wastewater Component	Size	Quantity	Unit	Approximate Year of Construction
Wastewater Treatment Facility (BLDG. 5920)				
Buildings	.69 mgd	1	EA	1997
Structures	.69 mgd	1	EA	1997
Process Equipment	.69 mgd	1	EA	1997
Buildings, Structures, & Process Equipment include: (below)				
Holding Tank 5920, Above ground, steel	200,000 gal	1	EA	1997
Structures – bar screen , grit chamber,				
Pumps (100 gpm, 250 gpm)				
Pumps (2 – 350 gpm)				
Activated Sludge Reactor				
Diffused Aeration System				
Secondary Clarifier				
Aerobic Digester				
Holding pond (110' X 120' X 6')	590,000 gal	1	EA	1995
Sewage Oxidation Pond (350' X 317' X 6')	4,870,000 gal	1	EA	1995
Sewage Oxidation Pond (290' X 570' X 6')	7,420,000 gal	1	EA	1995
Wastewater Irrigation System				
Building 5925, steel siding		600	SF	1997
irrigation area pumps	150 HP	2	EA	1995
Fiberglass building (estimated size)	10' X 20'	1	EA	1995
Chlorine injection pump (est. size)	1/8 HP	1	EA	1995
Cummins Back-up generator (estimated size)	80 kW	1	EA	1995
Sprinkler pipe, PVC	12-in.	2,004	LF	1995
Sprinkler pipe, PVC	10-in.	890	LF	1995
Sprinkler pipe, PVC	8-in.	2,803	LF	1995
Sprinkler pipe, PVC	6-in.	7,705	LF	1995
Sprinkler pipe, PVC	4-in.	10,240	LF	1995
Sprinklers, RainBird 4-A-51A Sam with 18x11.5 nozzle		180	EA	1995

TABLE 2B

Fixed Inventory, Wastewater Collection and Treatment System
Wastewater Collection and Treatment System, Camp Bullis, Texas

Wastewater Component	Size	Quantity	Unit	Approximate Year of Construction
Notes: EA = Each LF = Linear Feet PVC = Polyvinyl Chloride VC = Vitrified Clay * - Piping quantity based one Post supplied total inventory of pipe length. The totally length for each diameter was divided in half with half listed as PVC and half listed as Vitrified Clay				

TABLE 2C

Fixed Inventory, Wastewater Collection and Treatment System
Wastewater Collection and Treatment System, Canyon Lake Recreation Area, Texas

Wastewater Component	Size	Quantity	Unit	Approximate Year of Construction
Canyon Lake				
Sanitary Sewer main, VC	6-in.	3,640	LF	1966
Manholes, Brick Quantity estimated based on 1 MH every 300'	4-ft.	12	EA	1950
Wastewater Treatment Facility				
Building 306	140 sf	1	EA	1966
Process Equipment	0.01 mgd	1	EA	1985
9167 Aeration Tank	10,000 gpd	1	EA	1966
Aerated holding tank	55,000 gallon	1	EA	1985
Ford propane back-up generator	35 kW	1	EA	1999
Bar Screen, comminuter, 2 clarifiers	0.01 mgd	1	EA	1966
Weir Meter	0.01 mgd	1	EA	1966
Chlorine Contact Chamber	0.01 mgd	1	EA	1966
Notes: EA = Each LF = Linear Feet SF = Square Feet VC = Vitrified Clay				

J4.2.2 Wastewater System Non-Fixed Equipment and Specialized Tools

Table 3 lists other ancillary equipment (spare parts), and **Table 4** lists specialized vehicles and tools included in the purchase. Offerors shall field verify all equipment, vehicles, and tools prior to submitting a bid. Offerors shall make their own determination of the adequacy of all equipment, vehicles, and tools.

TABLE 3
Spare Parts
Wastewater Collection and Treatment System, Fort Sam Houston, Texas

Qty	Item	Make/Model	Description	Remarks
No spare parts are included with the system to be privatized.				

TABLE 4
Specialized Vehicles and Tools
Wastewater Collection and Treatment System, Fort Sam Houston, Texas

Qty	Item	Make/Model	Description	Remarks
No specialized tools or vehicles are included with the system to be privatized.				

J4.2.3 Wastewater System Manuals, Drawings, and Records

Table 5 lists the manuals, drawings, and records that will be transferred with the system.

TABLE 5
Manuals, Drawings, and Records
Wastewater Collection and Treatment System, Fort Sam Houston, Texas

Qty	Item	Description	Remarks
1	Drawings	Utility Drawings, Wastewater Collection System, Fort Sam Houston, TX.	
1	Drawings	Utility Drawings, Wastewater Collection System, Camp Bullis, TX.	
1	Drawings	Utility Drawings, Wastewater Collection System, Canyon Lake Recreation Area, TX.	
1	CD	GIS maps of Wastewater Collection System, Fort Sam Houston, TX.	

J4.3 Specific Service Requirements

The service requirements for the Fort Sam Houston wastewater system are as defined in the Paragraph C, *Description/Specifications/Work Statement*. The following requirements are specific to the Fort Sam Houston wastewater system and are in addition to those found in Paragraph C. If there is a conflict between requirements described below and Paragraph C, the requirements listed below take precedence over those found in Paragraph C.

J4.3.1 Digging Permits

J4.3.1.1 Contractor-Provided Permits

Contractor shall participate in the Fort Sam Houston Department of Public Works (DPW) digging permit process. The Contractor shall complete the section of the dig permit form, which may impact on the integrity of his Utility Systems and the safety of the requestors and return it to the DPW, Fort Sam Houston, Texas for each permit within 3 working days of receipt of the form from DPW. As part of this process, the Contractor shall routinely accept and process digging permit requests from Government work force; military units; maintenance, construction, and Army operations contractors; cable and phone maintenance and installation companies; fence rental companies; individual residents, and additional entities as identified by Contracting Officer to have a valid need for a digging permit. Contractor shall identify methodology of accepting, processing, approving, and listing reason(s) for disapproval. Contractor shall be responsible for all repairs, costs, and damages due to excavations by others for which he did not properly mark his utilities as part of the DPW digging permit process.

J4.3.1.2 Fort Sam Houston-Provided Permits

The Contractor shall first obtain digging permits directly from DPW for utilities owned by the Government before any drilling, digging, or excavation is undertaken. The Contractor shall provide a completed dig permit form available from DPW, to the DPW building, Fort Sam Houston, Texas for each permit. Allow 14 Working days for Government review of digging permit requests. A digging permit for a specified area of excavation expires 30 days after the issue date; Contractor must re-apply for a new permit to perform excavation in the area if the excavation was not started within the 30-day period. Permits will identify all underground utilities within 1,500 mm (5 feet) of the designated area. Contractor shall be responsible for all repairs, costs, and damages due to his excavations that fail to comply with the DPW digging permit process, including excavations extending beyond areas that have been cleared for excavation.

J4.3.1.3 Endangered Species

The following endangered species have protected habitat at Camp Bullis; Rhadine Exilis (beetle), Rhadine Infernalis Ewersi (beetle), Cicurina Madla (meshweaver), Dendroica Chrysoparia (golden-cheeked warbler), and Vireo Atricapillus (black-capped vireo). Caves and underground features provide habitat for the beetles. Trees and brush provide nesting areas for the birds. The Contractor shall coordinate and obtain approval from Camp Bullis Environmental Office prior to performing any operations and maintenance in these designated areas or prior to any system expansion at Camp Bullis.

J4.3.2 System Testing

The Contractor shall obtain a TPDES permit for the operation of the Camp Bullis (Referred to on the permit as North Fort Sam Houston) and CLRA treatment facility discharges. To the extent allowable by law, Fort Sam Houston will transfer their existing TPDES permit to the successful Bidder. The Contractor shall provide the Contracting Officer with a copy of any and all testing information and reports submitted for compliance with the TPDES permits within 15 days of submitting the reports to the agency.

J4.3.3 Sludge and Trash Disposal

Fort Sam Houston currently contracts out the disposal of trash and sludge generated from the Camp Bullis and CLRA wastewater treatment plants. The Installation's existing contract will be terminated upon award of a utilities privatization contract for the wastewater system. The utilities privatization Contractor shall be responsible for the collection and proper disposal of trash and sludge.

J4.3.4 Fire Control and Safety

The Contractor shall abide by Fort Sam Houston fire protection requirements. The utility system purchased by the Contractor may include facilities. These facilities may or may not include fire alarm systems. Where required by federal, state or local regulation, the Contractor shall maintain the fire alarm system for all facilities owned and operated by the Contractor. The Contractor shall permit Fire Department personnel access to their facilities to perform fire inspections and emergency response.

J4.3.5 Restricted Access (Ranges)

The Contractor shall coordinate with and obtain written approval from Fort Sam Houston for entry into the ammo storage facility and Ranges located on Camp Bullis. Access into the fenced area will require additional security clearance and full time military escort. Contractor shall obtain access to this area at the Range Control Building, 6110.

The Contractor shall coordinate with and obtain written approval from Fort Sam Houston Range Control for any future construction in the areas on Camp Bullis managed by Range Control. Contractor shall provide 30 day written notice to Range Control prior to performing any routine maintenance, repairs, construction, or other work on the utility system in the Ranges (all areas managed and controlled by Fort Sam Houston Range control). Contractor shall be required to coordinate all work necessary and as directed by Range Control during emergency response situations.

J4.3.6 Crisis Situations

IAW Paragraph C.9.8, *Exercises and Crisis Situations Requiring Utility Support*, the Contractor shall provide support as directed by Fort Sam Houston DPW or equivalent agency for exercises and crisis situations. Contractor shall submit Emergency Response Plans for approval by the Government for all Exercise and Crisis situations IAW C.9.8.

J4.3.7 Utility System Map Updates

Contractor shall provide updated utility system maps and Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE) compatible electronic data formats annually showing the location of Contractor's utility system on Fort Sam Houston. Maps and SDSFIE data shall accurately depict the location of all underground and above ground components of the system IAW Section C.5.1.5 *Record Drawings*. Contractor shall indicate changes to the utility system completed since the last update of the electronic submittal. Electronic data submittals shall be compatible with Fort Sam Houston's existing Geographic Information System (GIS) architecture and be GEO referenced to Fort Sam Houston's existing GIS coordinate system. Maps shall be marked for reference use only. One hard copy map and two copies of the electronic data shall be submitted as part of the Contractor's Annual Capital Upgrades and Renewals and Replacements Plan IAW Section C.11.2.4.

J4.3.8 Routine, Urgent, and Emergency Repair Response

Contractor shall respond to routine, urgent, and emergency service requests, whether issued by the government or the Contractor's personnel IAW Section C.8 Repair Response Notification Procedures.

J4.3.8.1 Emergency Service Request

An emergency condition is one that is detrimental to the mission of Fort Sam Houston, significantly impacts operational effectiveness, or compromises the safety, health, and life of personnel. Such requests shall include, but are not necessarily limited to, electrical outages, downed power lines, water outages, broken water mains, natural gas outages, natural gas leaks, or wastewater main overflows.

The Contractor shall ensure it is able to receive emergency service requests 24 hours a day, every day IAW Section C.8 Repair Response Notification Procedures. Once an emergency request is received, the Contractor shall respond immediately. A representative knowledgeable of the system and the Contractor's Service Interruption/Contingency Plan (as required in Section C.7 Response to Service Interruptions and Contingencies) shall be on the site of the emergency within 1 hour. Additionally, repair crews appropriately trained to eliminate the condition must respond to the emergency site within 2 hours. Work will be continuous until the emergency condition is eliminated or downgraded and service is restored. All emergencies will be remedied or downgraded to a non-emergency status within 24 hours.

J4.3.8.2 Urgent Service Requests

An urgent condition is not an emergency but significantly hinders performance of Fort Sam Houston's activities and requires elimination of potential fire, health, and safety hazards (for example, environmental controls, non-emergency utility leaks, special requests and events, plumbing problems, downgraded emergency responses, etc.).

Once an urgent request is received, the Contractor shall respond with a representative knowledgeable of the system and the Contractor's Service Interruption/Contingency Plan (as required in Section C.7 Response to Service Interruptions and Contingencies). The contractor shall be on the site of the request within 24 hours. All urgent requests will be remedied within 5 calendar days.

J4.3.8.3 Routine Service Requests

A routine service request is one that does not pose an immediate threat to public health, safety, or property, or to a mission or operation conducted at Fort Sam Houston. Such requests may include, but are not necessarily limited to requests for new or relocated service connections.

The Contractor is not required to respond to routine service requests outside normal duty hours. The Contractor may respond to routine service requests outside of normal duty hours at its option and with appropriate coordination. Initial response to any routine service request shall be made within 5 calendar days, and completed within 30 calendar days of receiving the request. After initial response, the Contractor shall pursue completion of routine service requests with due diligence.

J4.4 Current Service Arrangement

Fort Sam Houston's wastewater collection and treatment system consists of three separate systems (one for the Main Cantonment area, one for Camp Bullis and one for CLRA). The system that serves Fort Sam Houston does not include any treatment facilities. Wastewater is collected and discharged to the city of San Antonio wastewater collection system. The City bills Fort Sam Houston based on an estimated volume. The volume used for billing is based on 60 percent of the volume of potable water pumped each month. The Current peak estimated wastewater produced at Fort Sam Houston Main Post is approximately 60 million gallons (MG) per month, based on a peak water production rate of 98 MG per month.

Wastewater at Camp Bullis is treated and disposed of on-site. Treated wastewater from this system is used as irrigation water on the ranges under Texas Pollutant Discharge Elimination System (TPDES) permit 12080-001. To the extent allowable by law, Fort Sam Houston will transfer this TPDES permit. The average treated volume is approximately 40,000 gpd. Approximately 72,000 gallons of sludge and 70 cubic yards of trash are disposed of off-site annually.

The CLRA system consists of a 10,000 gallon per day (gpd) aeriated package plant. It discharges treated wastewater into Canyon Lake under TPDES permit 12074-001. The average treated volume varies from almost nothing during winter weekday periods to over 20,000 gpd during summer holidays. Approximately 39,000 gallons of sludge are disposed of off-site annually. Currently trash collected at CLRA is transported to Camp Bullis and is included in the annual volume reported for Camp Bullis. The Contractor shall obtain a separate TPDES permit for this discharge.

J4.5 Secondary Metering

There are currently no secondary meters included with the utility system being privatized and no requirements for secondary metering of wastewater at Fort Sam Houston facilities included in this contract. Any future wastewater secondary metering requested by the Government will be IAW Paragraph C.3, *Metering*.

J4.6 Monthly Submittals

The Contractor shall provide the Government monthly submittals for the following:

1. Invoice (IAW Paragraph G.2, *Submission and Payment of Invoices* and Paragraph J2.3.1, *Non-Government Installed Utilities Infrastructure*). The Contractor's monthly invoice shall be presented in a format proposed by the Contractor and accepted by the Contracting Officer. The Contractor shall provide sufficient supporting documentation with each monthly invoice to substantiate all costs included in the invoice as approved by the Contracting officer. Invoices shall be submitted by the 25th of each month for the previous month. Invoices shall be submitted to:

Name: Public Works Business Center, MCCA BPW

Address: Bldg. 4196, 2202 15th Street, Ste. 7, Fort Sam Houston, TX 78234-5007

Phone number: (210) 221-4869

2. Outage Report. The Contractor's monthly outage report (blockage and overflow information) will be prepared in the format proposed by the Contractor and accepted by the Contracting Officer. Outage reports shall be submitted by the 25th of each month for the previous month. Outage reports shall be submitted to:

Name: Public Works Business Center, MCCA BPW

Address: Bldg. 4196, 2202 15th Street, Ste. 7, Fort Sam Houston, TX 78234-5007

Phone number: (210) 221-4869

J4.7 Infiltration and Inflow (I&I) Projects

IAW Paragraph C.3.4, Energy and Water Efficiency and Conservation, the following projects have been implemented by the Government for managing and monitoring I&I.

- There are no infiltration and inflow projects associated with the utility system being privatized.

J4.8 Service Area

IAW Paragraph C.4, Service Area, the service area is defined as all areas within the boundaries of Fort Sam Houston, Camp Bullis, and the CLRA. The Camp Bullis and CLRA areas are serviced by separate collection systems from the Fort Sam Houston areas.

J4.9 Off-Installation Sites

Camp Bullis and CLRA are considered Off-Installation Sites. Camp Bullis is located north of Loop 1604 on NW Military Highway. CLRA is located on the southeast shore of Canyon Lake, approximately 40 miles northeast of Fort Sam Houston.

J4.10 Specific Transition Requirements

IAW Paragraph C.13, Transition Plan, **Table 6** provides a list of service connections and disconnections required upon transfer.

TABLE 6
Service Connections and Disconnections
Wastewater Collection and Treatment System, Fort Sam Houston, Texas

Location	Description
None	

J4.11 Government Recognized System Deficiencies

Table 7 provides a list of Government recognized deficiencies. The deficiencies listed may be physical deficiencies, functional deficiencies, or operational in nature. If the utility system is sold, the Government will not accomplish a remedy for the recognized deficiencies listed. The Offeror shall make a determination as to its actual need to accomplish and the timing of any and all such deficiency remedies.

Physical and functional deficiencies may require capital to be invested in the system. If any deficiency remedy requires a capital upgrade project, the capital upgrade project shall be proposed according to the following:

- Capital upgrade projects required to bring the system to standard shall be proposed under Schedule 3 – Initial Capital Upgrade(s)/Connection Charge(s).
- Capital upgrade projects required to replace system components shall be proposed in the first years of Schedule 2 – Renewals and Replacements – 50 Year Schedule, and the cost factored into Schedule 1 – Fixed Monthly Charge, for Renewals and Replacements as part of CLIN AA.
- Transition costs shall be proposed as a one-time cost and shall be treated similar to a capital project and included in Schedule 3 – Initial Capital Upgrade(s)/Connection Charge(s).
- Improvements proposed in the operational component of the work shall be included in Schedule 1 – Fixed Monthly Charge as part of CLIN AA.

TABLE 7
Wastewater System Deficiencies
Wastewater Collection and Treatment System, Fort Sam Houston, Texas

System Component	Deficiency Description	Type of Project
Fort Sam Houston		
Collection System Components	Some portions of the collection system piping and associated components, as shown on utility system drawings, were installed in the 1940s, 1950s, and 1960s. These components have exceeded their useful lives and should be replaced.	Renewals and Replacement
Camp Bullis		
Collection System Components	Some portions of the collection system piping and associated components, as shown on Base utility drawings, were installed in the 1940s, 1950s, and 1960s. These components have exceeded their useful lives and should be replaced.	Renewals and Replacement
Canyon Lake Recreation Area (CLRA)		
Collection System Mains and manholes	Collection system piping and manholes were installed in 1966. These components are in poor condition and should be replaced.	Renewals and Replacement
Communitors	Two communitors are not operational	Capital Upgrade
Chlorine Treatment	Current plant operation requires manual operation and adjustment of chlorine dosage. An automated system needs to be installed.	Capital Upgrade